



UTILITY APPLICATION  
OF  
ARA DIONYSIAN  
FOR  
UNITED STATES PATENT  
ON  
SELF CLOSING AND LOCKING HINGE

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Docket Number: 03-12180  
Sheets of Drawings: FIVE (5)  
Sheets of Written Description: TWELVE (12)  
Express Mail Label Number: EV 313989900 US

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# SELF CLOSING AND LOCKING HINGE

## **BACKGROUND**

There may have been many attempts to provide a self-closing hinge for doors, gates, and the like. Problems with current configurations may include complexity, cost, ease of installation, and ease of assembly and disassembly. What is needed is a low-cost, low complexity self-closing hinge that is easy to install and easy to assemble and disassemble.

## **SUMMARY**

Provided is a self-closing hinge system, including a first member, and a second member rotationally coupled to the first member, wherein the first and second members each include an oblique edge abutting each other, such that a horizontal force on one of the members is translated into a horizontal and vertical force.

## **15 BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is a perspective view of an exemplary embodiment of a hinge, showing the hinge in the open position.

Figure 2 is a perspective view of the exemplary embodiment shown in Figure 1, with one of the leaf members uncoupled from the other.

Figure 3 is a perspective view of another exemplary embodiment.

Figure 4 is a perspective view of yet another exemplary embodiment.

Figure 5 is a perspective view of the exemplary embodiment shown in Figure 4, with one of the leaf members uncoupled from the other.

## DETAILED DESCRIPTION

5 The detailed description set forth below in connection with the appended drawings is intended as a description of exemplary embodiments and is not intended to represent the only forms in which the embodiments may be constructed and/or utilized. The description also sets forth the functions and the sequence of steps for constructing and operating the invention in connection with the illustrated embodiments. However, 10 it is to be understood that the same or equivalent functions and sequences may be accomplished by different embodiments that are also intended to be encompassed within the spirit and scope of the invention.

Figure 1 shows a self-closing hinge system according to an exemplary embodiment, generally at **10**. System **10** typically includes a first leaf member **20**, 15 which is rotationally coupled to a second leaf member **40**. System **10** may include a shaft **12** that extends between the leaf members such that the members remain rotationally coupled. First leaf member **20** typically includes a first cylinder portion **22** and a first oblique edge **24**. First cylinder portion **22** is typically configured to extend around shaft **12**.

20 Second leaf member **40** typically includes a second cylinder portion **42** and a second oblique edge **44**. Again, the cylinder portion is configured to extend around shaft **12** such that first leaf member **20** and second leaf member **40** are rotationally coupled. Second oblique edge **44** may abut first oblique edge **24** such that when a

horizontal force is exerted on either member that horizontal force is translated into a horizontal and vertical force such that one member moves vertically with respect to the other member. With this configuration, it will be appreciated that the hinge may be self-closing in that when it is open, as shown in Fig. 1, a gravitational force will act upon it and the vertical gravitational force will be translated into a vertical and horizontal component such that the one member will move horizontally with respect to the other, and also move vertically with respect to the other.

First leaf member **20** may also include a door coupling portion **34** configured to couple to a door or a frame as desired. Similarly, second leaf member **40** typically includes a frame coupling portion **54** which is configured to couple to a door or a frame as desired. With one member attached to a door and the other member attached to a frame, this configuration would allow for a self-closing hinge and door.

System **10** also typically includes one or more stops **14** that are typically coupled to shaft **12** such that the leaf members will remain coupled to shaft **12**. Shaft **12** is typically a pin used in a door hinge, however it may be integrally formed with either leaf member or other configuration, as desired. The hinge is typically made of a rigid material such as a metal, however other materials may be utilized, as desired.

Figure 2 shows a perspective view of the exemplary embodiment in Figure 1, with second leaf member **40** decoupled from shaft **12** and first leaf member **20**. It will be appreciated that when the members are rotated with respect to each other one member will move in the vertical direction with respect to the other. First oblique edge **24** and second oblique edge **44** typically abut each other and may be lubricated with oil,

graphite or other lubrication materials. It will be appreciated that bushings may also be utilized such that when they wear out they can easily be replaced, to extend the life of the hinge. Similarly, stops **14** may also include bushings and/or lubrication or other materials to extend the life of the hinge, such that they will not wear out quickly.

Leaf members typically include apertures **60** that are typically configured to receive screws therethrough to couple a door or a frame to each of the leaf members. It will be appreciated however that other coupling configurations and methods may be utilized, as desired.

Figure 3 shows another exemplary embodiment of a self-closing hinge system generally at **70**. System **70** again typically includes a first leaf member **80** and a second leaf member **90** that are configured to rotationally couple together. System **70** also typically includes a shaft **72** that couples to both leaf members such that they are rotationally coupled together.

In this exemplary embodiment, first leaf member **80** again includes a first oblique edge **82** and also includes a top stay **84** and a bottom stay **86**. Similarly, second leaf member **90** includes a second oblique edge **92** as well as a top stay **94** and a bottom stay **96**. With this configuration when the door is in the open position, the top stay portions will abut each other such that the hinge may remain in the open position until acted upon by a horizontal force such that oblique edges will abut each other and the hinge may move toward a closed position and one member will move vertically with respect to the other. Also with this configuration, with top stays abutting each other,

the force may be reduced on shaft 72 such that the shaft could be removed easily and/or the system may easily be disassembled.

Similarly when bottom stays 86 and 96 abut each other, the door will remain in a closed position until acted upon by a horizontal force. In this configuration also the forces may be reduced on shaft 72 such that it may be removed from the system easily. This configuration would allow a person to easily remove the shaft and thus be able to decouple the leaf members and remove a door from a frame very easily.

Figure 4 shows yet another embodiment of the present invention generally at 100. System 100 again typically includes leaf members 102 and 106, but also include 10 vertical edge, such that one leaf must be moved vertically before a horizontal force may act upon it to open the hinge.

Figure 5 shows the exemplary embodiment of Figure 4 with the second leaf member not coupled to the system. System 100 includes a first leaf member 102 and a second leaf member 104 that both include a vertical portion 106 and 108 respectively. 15 With this configuration, a door or one of the members would have to be lifted or moved vertically such that the oblique portions abut each other to allow the hinge and, consequently, a door to be opened. This may be useful for child safety as well as used with animals, and the like. Again, system 100 includes oblique edges 110 and 112 and upper stops 114 and 116, and lower stops 118 and 120 such that the hinge will remain 20 in an open position when the top stays are abutting each other and would remain closed when the bottom stays are abutting each other.

Again, the system **100** may typically include apertures **62** that are configured to allow a screw to pass therethrough to couple a door, frame, or the like, to the hinge system. This system is simple, inexpensive, easy to assemble and disassemble, and still provides a self-closing system for doors and the like. It will be appreciated that a door <sup>5</sup> may have to move vertically with respect to a frame for this system to operate. The frame configuration and size may have to be adjusted to allow for this, and faciaboard or other could be placed across the gap above or below the door to minimize the gap or visual gap, as desired.

In closing, it is to be understood that the exemplary embodiments described <sup>10</sup> herein are illustrative of the principles of the present invention. Other modifications that may be employed are within the scope of the invention. Thus, by way of example, but not of limitation, alternative configurations may be utilized in accordance with the teachings herein. Accordingly, the drawings and description are illustrative and not meant to be a limitation thereof.